The Role of Trait Extraversion in Shaping Proactive Behavior: A Multilevel Examination of the Impact of High-Activated Positive Affect

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Abstract

This daily diary study examines the different functions of personality trait extraversion in shaping proactive behavior at both between-person and within-person levels. Building on the affect-as-resources perspective, the authors propose that personality trait extraversion is positively related to higher levels of high-activated PA, and consequently more proactive behavior at the between-person level. However, it mitigates the positive relationship between daily high-activated PA and daily proactive behavior at the within-person level. Results of a multilevel path model using data collected from 122 individuals for 10 consecutive working days support the hypotheses. This study advances our understanding of the role of personality trait extraversion in shaping individual proactive behavior at different levels.

Keywords: high-activated positive affect; extraversion; proactive behavior; diary study

1. Introduction

Proactive behavior, which refers to self-initiated, future-oriented behaviors directed at bringing about change to situations or/and oneself, has attracted increasing scholarly attention over recent years (e.g., Crant, 2000; Parker, Bindl & Strauss, 2010). Typically studied proactive behaviors include using one's initiative, taking charge of situations, actively anticipating and solving problems, and implementing new work methods, among others (Parker & Collins, 2010). Since proactive behaviors play a significant role in shaping individuals' work, career, and quality of life (e.g., Aspinwall & Taylor, 1997; Parker et al., 2010), it is important to understand how such behavior is fostered.

Consolidating the broad literature on proactivity, Parker et al. (2010) proposed an integrated framework, which posits that personal and situational factors exert influence on proactive behaviors by affecting an individual's motivational states. They identified three motivational pathways towards proactive behavior: a *can-do* motivation, which concerns individuals' self-perceived ability in engaging in proactive behavior; a *reason-to* motivation, which concerns individuals' perceived importance of proactive behavior in fulfilling their goals; and an *energized-to* motivation, which posits that individuals' affective experiences provide an 'energizing' motivation that fuels proactive behavior.

While the first two motivational processes, which tend to focus on cognitive-motivational pathways, have been extensively studied, the *energized-to* pathway is relatively new and under-explored (Parker et al., 2010). In line with the affect-as-resources perspective (e.g., Aspinwall, 1998), Parker et al. (2010) conceptualized that among different forms of affect, high-activated positive affect (PA) (e.g., feeling excited, enthusiastic) is most important in promoting proactivity. Empirical studies supports this proposition, showing that individuals with higher levels of high-activated PA are more likely to engage in different phases (e.g., Bindl, Parker, Totterdell, & Hagger-Johnson, 2012) and forms (e.g., Warr, Bindl, Parker, &

Inceoglu, 2014) of proactive behavior. The same effect is also observed at the team level, wherein teams having a strong positive affective tone are more proactive in completing teamwork (Wu & Wang, 2015). Although these studies focus mainly on between-person or team differences, the same affect-as-resources perspective can also be applied at a within-person level. Given that high-activated PA has an energizing potential, experiencing this affect on a given day could equip individuals with high levels of energy, spirit, and enthusiasm, providing energy resources for them to engage in approach-oriented behaviors and become proactive. Empirical evidence supports this theoretical inference. For instance, focusing on PA in general, Fritz and Sonnentag (2009) reported that daily PA is positively associated with proactive behavior on the same and the following workday. Focusing on high-activated PA specifically, diary studies have revealed that when an individual experiences high-activated PA, the individual is more likely to be innovative (Madrid, Patterson, Birdi, Leiva, & Kausel, 2014) or to actively direct efforts at investing activities (Seo, Bartunek, & Barrett, 2010).

Although research so far supports the role of high-activated PA in sustaining individual proactive behavior at the between- and within-person levels, such multilevel effects have not been examined simultaneously. As associations among psychological constructs may not necessarily be ergodic (e.g., Molenaar, 2004), it is worth examining the multilevel association between high-activated PA and proactive behavior together to provide cogent evidence. Moreover, how personality can shape the multilevel effects of high-activated PA and subsequent proactive behavior has not been examined. Although personality has been studied and linked to proactive behavior at the between-person level (see Thomas, Whitman, and & Viswesvaran, 2010 for a meta-analysis), it has been rarely investigated in studies focusing on proactive behavior at the within-person level (except Madrid et al., 2014) and has not been linked to the *energized-to* pathway at different levels in a multilevel examination.

The aim of this study is thus to explore how individual differences in stable personality traits could influence the multilevel effects of high-activated PA in shaping proactive behavior at both between- and within-person levels. As elaborated shortly, we focus on personality trait extraversion, which refers to the extent to which an individual has a need for stimulation, activity, assertiveness, and interpersonal interaction (Digman, 1990). We propose that those high in personality trait extraversion tend to feel high-activated PA more frequently and thus engage in more proactive behavior, which can be summarized as a mediation mechanism at the between-person level. This proposition is in line with recent advances in the motivational perspective towards personality such that extraversion is understood as individuals' sensitivity to experience rewards from social interactions (Denissen & Penke, 2008). For proactive behavior at the within-person level, we hypothesize that due to the relative lack of energy-enabling psychosocial resources to be proactive, which are typically possessed by extraverts, introverts might particularly rely on the energizing force provided by daily high-activated PA to become proactive on that day. This reflects a cross-level interaction effect of personality trait extraversion on the within-person association between daily high-activated PA and daily proactive behavior. Overall, this study seeks to extend research on an affective motivational pathway in shaping proactive behavior at both between- and within-person levels, and to provide a complete picture about the motivational and individual antecedents underpinning proactive behavior at different levels.

2. Literature and Hypotheses

2.1. High-activated PA and proactive behavior at the between- and within-person levels

In studying affect, researchers have shown the existence of two orthogonal dimensions: *valance*, which represents the experience of pleasure ranging from unpleasant (negative affect - NA) to pleasant (PA); and *arousal*, which denotes one's sense of energy and readiness for action, and the extent ranges from low-activated to high-activated (e.g., Russell, 1980; Watson,

Clark & Tellegen, 1988). In modeling the psychological mechanisms of proactive behavior, Parker et al. (2010) contended that PA facilitates individuals' forward thinking and future orientation, and activates and promotes an approach tendency towards goals (i.e., proactivity). They further specified that strong motivational forces originate from high-activated PA, which is characterized by feeling energized, inspired and enthusiastic, as this affect provides the energizing resource that promotes individuals to put effort into behaviors for attaining goals or avoiding particular outcomes (Parker et al., 2010). In contrast, low-activated PA, such as feeling calm and contented, tends to facilitate reflection rather than forward-thinking, thus making it less likely to generate an *energized-to* state to foster proactivity (Parker et al., 2010). This reasoning is in line with the affect-as-resource perspective (e.g., Aspinwall, 1998; Aspinwall & Taylor, 1997), which suggests that affect provides an individual energy resources that motivate proactive behaviors. According to this perspective, the presence of high-activated PA provides the individual the information that these resources are adequate to compensate for potential costs involved in being proactive at a particular time.

As mentioned earlier, the between- and within-person levels of the energized-to pathways are empirically supported, as demonstrated by the positive association between high-activated PA and proactive behavior at different levels. Studies focusing on the between-person relationship revealed that individuals with high-activated PA, but not low-activated PA, tend to engage in all phases of the behavioral process of proactivity (e.g., envisioning, planning, enacting, and reflecting; Bindl et al., 2012) and in different forms of proactive behavior (e.g., voice, taking charge, problem prevention, and strategic scanning; Warr et al., 2014). Studies focusing on the within-person relationship revealed that experiencing high-activated PA in a week is positively related to innovative behavior in that week (Madrid et al., 2014). Consistent with this empirical evidence, we expect that at the between-person level, those who experience more high-activated PA will engage in more proactive behavior than those who experience

lower high-activated PA; at a within-person level, when an individual experiences high-activated PA, he or she will be more likely to perform proactive behavior. We do not propose these as hypotheses, for both effects have been observed in previous studies, despite never having been examined simultaneously.

2.2. The role of personality trait extraversion

We now turn to how personality traits can shape proactive behavior through influencing the effects of high-activated PA at different levels. We focus on trait extraversion because, among the Big Five personality traits, extraversion has the strongest association with proactivity (e.g., corrected correlation at .42 between extraversion and proactive personality, Thomas et al., 2010 for a meta-analysis). Extraverted individuals are usually bold, outgoing, active, and high spirited, while less-extraverted individuals are quiet, passive, and less sociable (Digman, 1990). We propose that at the between-person level, personality trait extraversion fosters proactive behavior via high-activated PA. First, the positive relationship between trait extraversion and general PA is well established at the between-person level (Diener & Lucas, 1999). Underpinning this relationship is the view that extraverts, due to their active participation in social activities for enjoyment and pleasure (e.g., Emmons & Diener, 1986) and their sensitivity to rewards and incentive stimuli (Lucas, Diener, Grob, Suh, & Shao, 2000), have a greater tendency to experience PA. Specifically for high-activated PA, Yik and Russell (2001) found that extraversion positively related to activated pleasant affect. Second, as previously discussed, the *energized-to* pathway (Parker et al., 2010) indicates that, at the between-person level, those who experience higher levels of high-activated PA are more inclined to engage in proactive behavior. In light of Bindl et al. (2012), this occurs because high-activated PA fuels energy, inspiration, and enthusiasm to facilitate engagement and persistence in activities, which are essential elements of proactivity. Taken together, we hypothesize that at the between-person level, personality trait extraversion will be positively

associated with high-activated PA, which in turn will be positively associated with proactive behavior (*Hypothesis 1*). This proposition is also in line with a recent conceptualization on personality, which posits that personality reflects stable individual differences in people's motivational reactions to situational cues (Denissen & Penke, 2008). According to this view, trait extraversion motivates behaviors by predisposing individuals to experience social interactions as rewarding – that is, to derive positive affect from these situations.

We further propose that personality trait extraversion will have a cross-level moderating effect on the affect-proactivity relationship at the within-person level. Drawing on the *energized-to* pathway (Parker et al., 2010) and the affect-as-resource model (e.g., Aspinwall, 1998; Aspinwall & Taylor, 1997), we have discussed that individuals need to have strong energizing resources, as provided by daily high-activated PA, in order to engage in day-to-day proactivity. However, the extent to which daily high-activated PA drives daily proactivity to occur may vary across individuals. We argue that the daily proactivity of more extraverted individuals will be less sensitive to the daily provision of dynamic, energizing forces, as generated by daily high-activated PA, because these individuals are equipped with a generally high level of energy resources that enable them to move forward and take actions day to day, both psychologically and behaviorally (Watson & Clark, 1997). This argument is partly evidenced in previous research (e.g., Chi, Chang, & Huang, 2015), which shows that when psychosocial resources are stable (e.g., resources entailed in personality traits which take long to change), people are motivated to engage in task- and goal-oriented behaviors regardless of their daily or momentary affect. In contrast, due to the relative lack of these resources, less extraverted individuals may be particularly sensitive to daily high-activated PA, which generates compensatory resources for proactive behavior to occur on that day. In other words, the lack of general energy resources of less extraverted individuals heightens their sensitivity to and reliance on the energizing forces experienced on a daily basis, so for them, fluctuations

in daily high-activated PA will be more likely to cause variations in daily proactive behavior. Following this line of reasoning, we expect the positive effect of daily high-activated PA on daily proactive behavior to be stronger for less rather than more extraverted individuals (*Hypothesis 2*).

It is relevant to note that in investigating our hypothesized relationships, we controlled for individuals' other personality traits in the Big Five model. This is necessary because it can be argued that introverted individuals, despite the general lack of important psychosocial resources to be proactive, as suggested by the *energized-to* pathway, may have other compensatory resources that enable proactive behavior. For instance, individuals with high openness to experience may have greater access to new ideas and thoughts and thus have great cognitive capacity for proactivity (*can-do*), and individuals with high conscientiousness may have stronger motivation towards demonstrating competence by enacting proactive behavior (*reason-to*) (Thomas et al., 2010). Controlling for the other personality traits can establish better empirical contributions regarding the unique effect of trait extraversion and its impact on the *energized-to* pathway in shaping proactive behavior.

3. Methods

3.1. Participants and procedure

Participants were full-time psychology students at an Australian university who participated in this study in partial fulfillment of the requirements for an introductory psychology course. Prior to the start of the diary study, participants were asked to complete an online questionnaire to report their personality traits and demographics. Then they were asked to complete a short daily survey online at the end of each day for the next 10 consecutive working days. In this daily survey, they were asked to reflect on their experiences in professional activities on that day, either in the academic context or the work context (if they

had any form of part-time employment), and to report their affect and proactive behavior on that day. We collected data only on working days as participants were more likely to engage in professional activities on these days and thus would provide a relatively consistent report of their proactivity in this context. In administering the daily survey, we sent participants an SMS text containing a web-link to the daily survey at 8pm on each of the 10 working days to prompt them to complete the survey. All details and data provided by participants were kept confidential, and names were deleted immediately after data from different surveys were matched. A total of 122 students participated in the study, and most of them completed the entire 10-days diary study, yielding a total number of 1,189 observations and an average of 9.83 observations per participant. Participants had an average age of 20.79 years (ranging from 16 to 52), and 76% were female.

3.2. Measures

Personality trait extraversion. We used the extraversion scale from the 50-item International Personality Item Pool (IPIP, Goldberg, 1992). This measure consists of 10 items, one example item being "I am the life of the party". The full measure is provided on the IPIP website. Responses were made on a 5-point Likert-type scale (1 = "*strongly disagree*", 5 = "*strongly agree*"). The internal consistency (α) was .87.

Daily proactive behavior. Participants' daily proactive behavior was measured by items selected and adapted from two established scales, the Self-Report Initiative Questionnaire (Frese, Fay, Hilburger, Leng & Tag, 1997) and the Proactive Personality Scale (Bateman & Crant, 1993). The measure adaption process was conducted to identify items that were more behavior-oriented and to ensure that the behaviors described could be experienced on a daily basis by university students. Two authors from the author team carried out item identification and measure adaptation. The final measure included 6 behavioral items: "Today, I looked for better ways to do things", "Today, I actively attacked problems", "Today, I did more than I

was requested to do", "Today, I acted upon opportunities in order to attain my goals", "Today, I searched for a solution immediately when I saw something wrong", and "Today, I found a way to work around obstacles". The response was on a 5-point scale (1 = "*strongly disagree*", 5 = "*strongly agree*"). Daily proactive behavior was calculated for each day by computing the mean of the six items ($\alpha = .89$).

Daily high-activated PA. High-activated PA was measured by three items selected from Warr (1990): "enthusiastic", "excited", and "inspired". These items are in line with those in other established affect measures (e.g., Watson et al., 1988) and the same items have been used in prior research (e.g., Bindl et al., 2012, Madrid et al., 2014). Participants responded the extent to which they experienced these emotions on that day, on a 5-point Likert-type scale (1 = "*not at all*", 5 = "*always*"). High-activated PA was calculated for each day by aggregating the three items ($\alpha = .87$).

Control variables. We controlled for the other four personality traits also taken from the 50-item IPIP scale (Goldberg, 1992), which contains 10 items each for agreeableness ($\alpha = .76$), conscientiousness ($\alpha = .80$), neuroticism ($\alpha = .87$), and openness to experience ($\alpha = .79$). We also controlled for participants' age and gender.

3.3. Analytical Strategy

We performed multilevel structural equation modeling (Preacher, Zyphur, & Zhang, 2010) to test our hypotheses in a multilevel path model. We described a two-level model where daily high-activated PA and proactive behavior (time-variant variables) were defined at Level 1 and personality trait extraversion and control variables (time-invariant variables) were defined at Level 2. The Level-1 predictor (high-activated PA) was person-mean-centered, whereas Level 2 predictors (personality trait extraversion and control variables) were grand-mean-centered. Hypothesis 1 was tested by the Level-2 relationship among personality trait

extraversion, high-activated PA, and proactive behavior across days. Hypothesis 2 was tested by cross-level moderation of personality trait extraversion (Level 2) predicting the random slope of the Level-1 relationship between daily high-activated PA and daily proactive behavior. We used Mplus 7.0 (Muthen & Muthen, 2012), which allowed us to test these relationships simultaneously.

4. Results

Table 1 shows the means and standard deviations for all study variables as well as their intercorrelations. At the between-person level, personality trait extraversion had moderate relationships with daily high-activated PA (r = .30, p < .01) and with daily proactive behavior (r = .34, p < .01). Although the two daily variables had relatively high correlations (r = .73, p < .01) at the between-person level, at a within-person level their correlation was moderate (r = .47, p < .01). These results demonstrate that the key study variables are distinct from each other.

Insert Table 1 About Here

Results from our multilevel path model are presented in Figure 1. The likelihood ratio test confirmed that our proposed model was better than an alternative model without interaction effects (Δ2LL [df = 1] = 5.44, p < .05). At the between-person level, personality trait extraversion had a positive relationship with high-activated PA (estimate = 0.22, s.e. = 0.11, p < .05), which further had a positive relationship with proactive behavior (estimate = 0.54, s.e. = 0.06, p < .01). The mediation effect was tested using the RMediation package developed by Tofighi and MacKinnon (2011). A significant indirect effect was found (estimate = 0.119, s.e. = 0.06, 95% CI = [0.002, 0.243]), supporting Hypothesis 1.

At the within-person level, daily high-activated PA had a positive relationship with daily proactive behavior (estimate = 0.83, s.e. = 0.13, $p < .01$). Personality trait extraversion had a significant, negative cross-level moderation effect on this Level-1 relationship (estimate = -0.12, s.e. = 0.05, $p < .05$). As displayed in Figure 2, the positive slope between daily high-activated PA and proactive behavior was stronger among individuals with low extraversion, as compared to individuals with high extraversion, supporting Hypothesis 2[1].

Insert Figure 1 & 2 About Here

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5. Discussion

Using a diary study design, we examined the role of personality trait extraversion in shaping proactive behavior at the between- and within-person levels via its different functions on high-activated PA at different levels. Our results contribute to the literature in several ways. First, our results provide solid support for the *energized-to* motivational pathway towards proactivity (e.g., Bindl et al., 2012; Parker et al., 2010) at both the between-person level and the within-person level when they are examined simultaneously, supporting that the energizing effect of high-activated PA on proactive behavior is ergodic. Second, we revealed the unique role of personality trait extraversion in enabling proactive behavior at the between-person level and the within-person level. At the between-person level, it leads to generally high levels of high-activated PA, thus providing the energizing force for individuals to be proactive in

[1] *We also measured trait extraversion using 4 items from the Big Five Adjective measure ("talkative", "energetic", "assertive" and "adventurous", Goldberg, 1992, α = .75), with which we replaced the IPIP measure to cross-validate our results. Using this measure, trait extraversion had a marginally significant effect on high-activated PA (estimate = 0.16, s.e. = 0.09, p = .08), which then had a significant effect on proactive behavior (estimate = 0.54, s.e. = 0.05, p < .01) at the between-person level. The indirect effect was significant with a 90% CI [.005, .174]. As such, Hypothesis 1 is supported although the significance level decreased slightly. We also found that trait extraversion had a significant cross-level moderation effect (estimate = -0.10, s.e. = 0.04, p < .05), supporting hypothesis 2. Full results are available from the authors.*

general. This extends earlier research on the positive relationship between trait extraversion and proactivity (e.g., Thomas et al., 2010) by providing a more complete picture of its psychological mechanism. More importantly, we revealed its different role at the within-person level, as it can act as a cross-level moderator for the relationship between daily high-activated PA and daily proactive behavior. The discovery of this cross-level moderation effect provides new evidence to extend the *energized-to* motivational pathway of proactivity. Our results suggest that individual differences exist in terms of their relative susceptibility to the daily *energized-to* motivation. Extraverted individuals may be already in possession of the psychosocial resources to be proactive, so the benefits of an *energized-to* motivational state in further energizing them may be limited. In contrast, less-extraverted individuals, who may lack readily-available psychosocial resources, may be more sensitive to this energizing pathway on a daily basis. Having high-activated PA on a particular day – regardless of how it was generated – could provide them a compensatory energy force and thus fuel their proactivity on that day.

Practically, our study suggests that although introverts may appear less proactive in general, they can become proactive when motivated by energizing resources, such as those generated by daily high-activated PA. Therefore, rather than concluding that introverts are less proactive (e.g., Thomas et al., 2010), we should acknowledge that introverts can benefit from purposeful facilitation to develop energizing resources on a day-to-day basis. For example, they might benefit from encouragement to take part in engaging and energizing events, and from purposeful reflections on these experiences, so as to elicit excitement and inspiration.

Several limitations of our study should be noted. First, daily affect and behavior variables were completed via self-report at the same time, so the causal relationship between these two variables cannot be teased out from the data. In fact, it is possible that the reverse effect can also exist. Future research can consider more explicit testing of this dynamic spiral between affect and proactivity. Second, we only considered high-activated PA in this study and

thus may not have captured a comprehensive view of the effect from affect. Although previous research indicates that low-activated PA may not contribute significantly to proactive behavior (e.g., Bindl et al., 2012), future studies may include low-activated PA and other forms of affect to explore the unique effect of high-activated PA on proactive behaviors.

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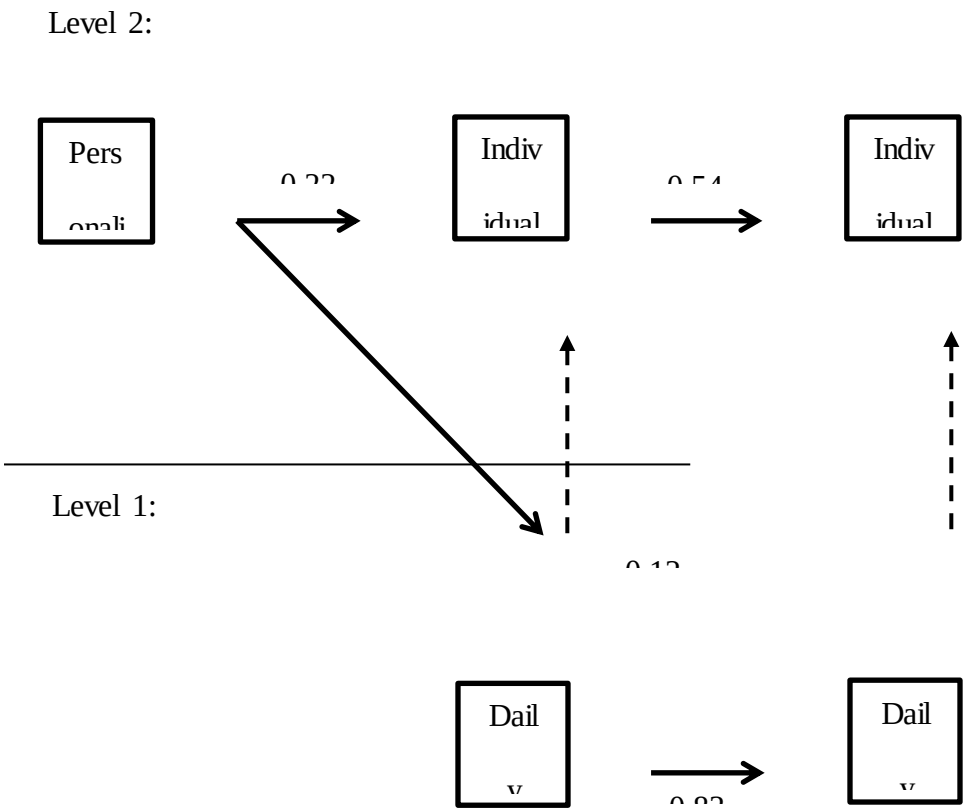
Table 1. Descriptive statistics.

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Age	20.79	7.39	--								
2. Gender (M=0, F=1)	0.76	.43	-.01	--							
3. Personality trait extraversion	3.25	.63	.20*	-.02	--						
4. Personality trait agreeableness	3.96	.44	.15	.33**	.35**	--					
5. Personality trait conscientiousness	3.23	.58	.07	-.09	.04	.21*	--				
6. Personality trait neuroticism	3.05	.72	-.22*	.39**	-.21*	.05	-.09	--			
7. Personality trait openness to experience	3.58	.51	.03	.01	.33**	.30**	.18*	.06	--		
8. Daily high-activated PA	3.22	.73	.11	-.04	.30**	.13	.07	-.37**	.16	--	.47**
9. Daily proactive behavior	3.20	.59	.21*	-.04	.34**	.18*	.18*	-.29**	.35**	.73**	--

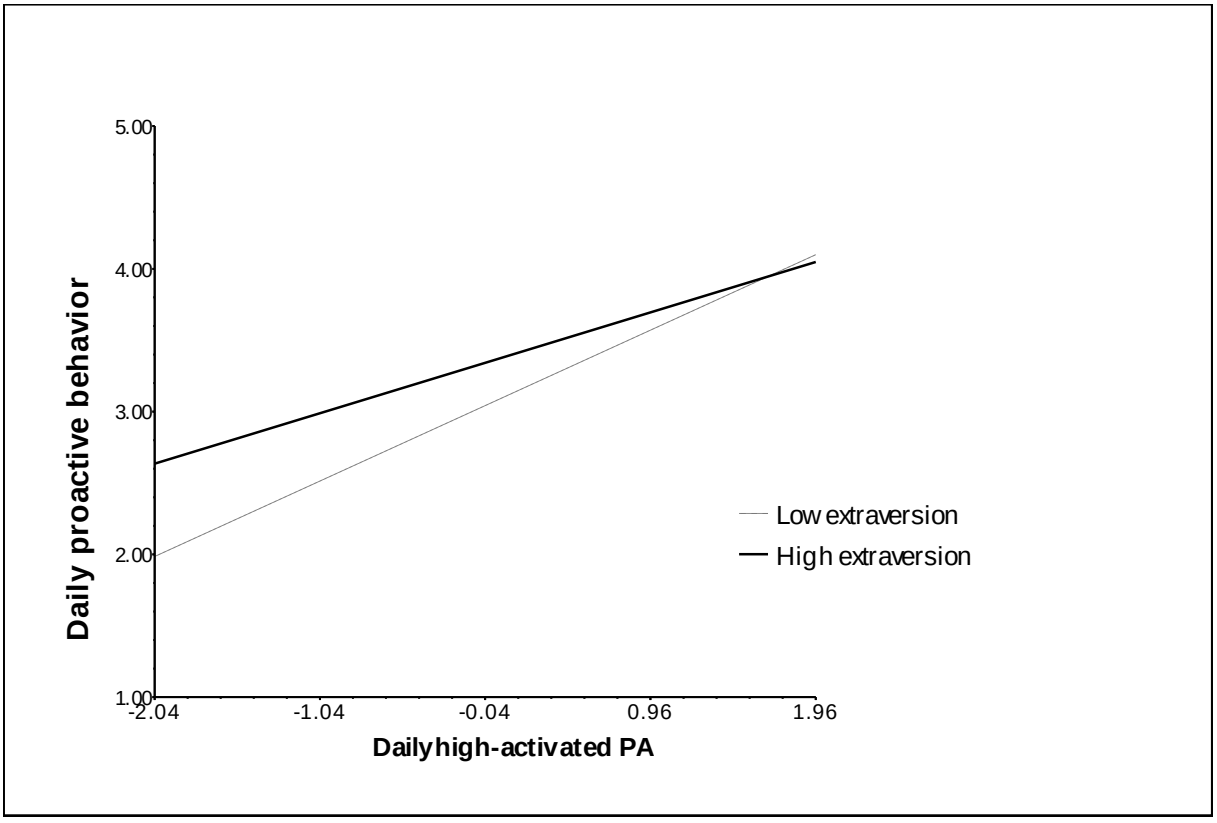
*Note: * p < .05, ** p < .01. Correlations below diagonal at the between-person level and correlations above diagonal at the within-person level.*

Figure 1. Estimated effects in the multilevel path model



Note: Age, gender, and the other four personality traits have been controlled for. Only the focal variables are included for clarity. Full results can

Figure 2. Cross-level moderation of trait extraversion.



Note: The mean of high-activated PA was set at zero, and the X-axis ranges from -2.0 SD to +2.0 SD. Age, gender and other four traits are controlled for. Graph plotted in HLM for better illustration.